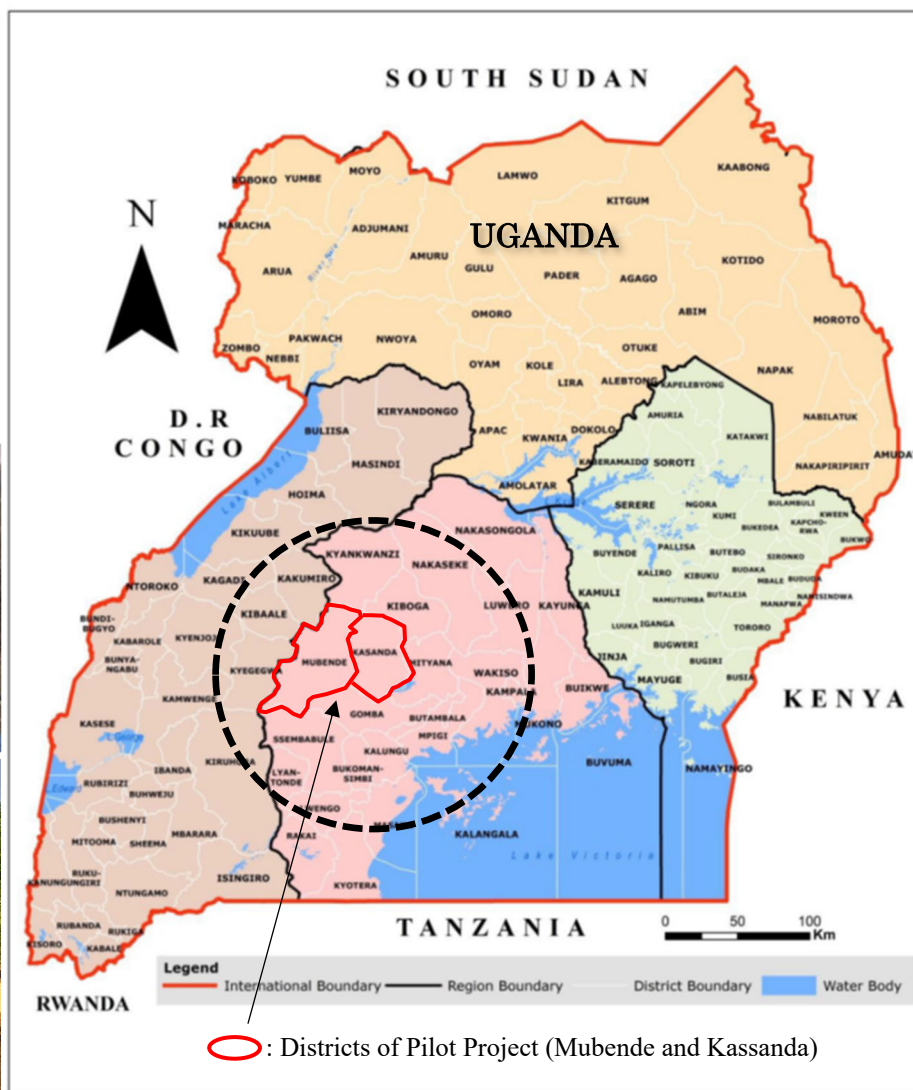
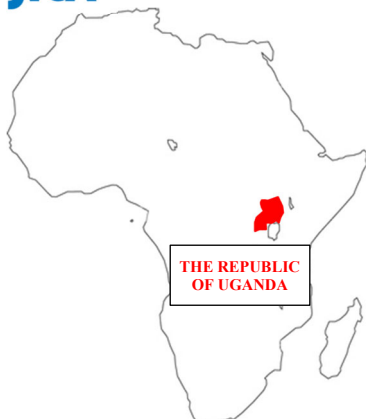


The Project for Operation & Maintenance for Rural Water Supply and Improved Hygiene and Sanitation in the Republic of Uganda

- Introduction of Innovative Maintenance Management System that Dramatically Reduces Non-functional Periods of Hand Pumps -

August 2022



1. Background and Challenges of the Project

(1) Challenges facing rural water supply and sanitation facilities

Many rural people in sub-Saharan African countries, not only in Uganda, use boreholes as their source of safe water. These water source facilities are constructed with the support of their governments and development partners. After the construction, daily management

(cleaning, replacement of consumable parts, etc.) is performed by Community Based Management System ("CBMS"), an operation and maintenance ("O&M") method in which the community is responsible for the management of the facilities. However, CBMS has its own set of difficulties, including (a) maintaining an organization for O&M in the community, such as Water and Sanitation Committee ("WSC"), (b) securing a supply chain of spare parts and Hand Pump Mechanics

(“HPMs”), and (c) collecting contributions from water users. As a result, many boreholes are left non-functional.

Meanwhile, in the sanitation sector, since sanitation in these countries are generally given lower priority than water supply, government budget allocations to the sanitation sector are not sufficient. Therefore, the incidence of diarrhea, the most common cause of death among children, is high.

(2) Situation and issues of rural water supply in Uganda

National Development Plan (2010/2011 - 2014/2015) (“NDP 2010-2015”) set the following four indicators and targets to be achieved by 2015 as goals for the water and sanitation sector.

- % of people who has access to an improved water source within 1 km (rural) : 77%
- % of functionality of improved water sources that are functional at a time of spot-check (rural): 90%
- % of people with access to improved sanitation (households): 77%
- Ratio of pupil to latrine/ toilet in schools: 40:1

According to the Water and Environment Sector Performance Report 2012 (“WESPR 2012”) prepared by the Ministry of Water and Environment (“MWE”), which is responsible for the water and sanitation sector in Uganda, rural water supply facilities, including both piped scheme and boreholes with handpumps, that are functional at a time of spot-check (rural) was 83%. Meanwhile, the average functionality of boreholes with hand pumps constructed under Japan's grant aid project “The Project for Rural Water Supply (Phase 2)” (2003-2004) was about 70% (Follow-up Cooperation Report, 2011). The functionality rate of boreholes with hand pumps is lower than that of rural water supply facilities in the nationwide.

Regarding the sanitation sector, the access rate to improved sanitation (households) in rural areas was 70% (WESPR 2012), which is lower compared to the

target of 77% (NDP 2010-2015).

Regarding the reasons for the low functionality of boreholes with hand pumps compared to other water supply facilities, the following vulnerabilities were raised in the maintenance of boreholes with hand pumps (“The Project for Rural Water Supply (Phase 2) Follow-up Cooperation,” 2006-2009).

- Insufficient funds for O&M
- Insufficient skill and experience of HPMs
- Weak O&M system for WSCs and Hand Pump Mechanic Associations (“HPMAs”)

Under these circumstances, the Government of Uganda requested Japan's assistance through a technical cooperation project to improve O&M of rural water supply facilities and sanitation conditions. This project was started in September 2015 with the aim of resolving these issues faced by conventional O&M methods.

2. Approaches to Solving the Issues

(1) Project implementation structure

The implementing agency (counterpart agency: “C/P”) for the Ugandan side is the Rural Water Supply and Sanitation Department (“RWSSD”) of the MWE. In addition to the above C/P, activities were also conducted in collaboration with the District Water Offices (“DWOs”) and sub-county officials in charge of water administration in the target districts.

The Project Design Matrix of this project is as follows.

<p>Overall Goal O&M policy and system of rural water supply facilities improved by the Central Government are adapted to wide areas in Uganda</p> <p>Project Purpose O&M system of rural water supply facilities and hygiene and sanitation (H&S) in the target districts, and system of the Central Government relating to O&M are improved</p> <p>Output 1. Strategy for capacity development in O&M</p>

of rural water supply facilities and improvement of H&S condition is formulated

- 2A. O&M support system of rural water supply facilities in the public and private sectors is strengthened in the target districts
- 2B. A new O&M support system of rural water supply facilities related to user fee collection is formulated
3. Operational and management capacity of Water and Sanitation Committee (WSC) is strengthened in the target districts
4. Capacity to supervise development of rural water supply facilities is strengthened
5. Proposed ODF practices in the selected communities implemented
6. Good practices, lessons learnt in the project and recommendations for a new O&M support system are shared widely with stakeholders in the water and sanitation sector

As an approach to solving issues related to rural water supply, activities were initially conducted based on the basic concept of strengthening the operational capacity of WSCs that adopt CBMS, a conventional O&M method. However, sensitization activities to strengthen the capacity of a large number of WSCs and water users can be time-consuming and costly. In addition, the effectiveness of the activities gradually diminishes over time, requiring repeated support for WSCs to maintain adequate O&M. In this manner, the CBMS was found to contain challenges (especially sustainability issues) that cannot be solved by the system itself.

Therefore, this project proposed the direct management system ("DMS"), described below, as a new O&M system to replace CBMS, and conducted a pilot project on the operation of DMS as an activity related to Output 2A. Regarding the collection of DMS operating expenses from water users, as an activity

related to Output 2B, various collection methods were tested in the pilot project to find the best way for the DMS.

Meanwhile, as an approach to solving sanitation-related issues, awareness-raising activities based on the Community Led Total Sanitation ("CLTS") method were implemented, and activities related to the Open Defecation Free ("ODF") declaration were conducted, including latrine construction demonstrations, School Led Total Sanitation ("SLTS"), and activities based on sanitation marketing and other methods were conducted.

(2) DMS: Introduction of a new O&M system

As mentioned above, this project trialed a pilot project of DMS, a new O&M system to replace CBMS¹. The DMS is an O&M system in which service stations ("SS") are established as organizations to repair hand pumps and provide hand pump repair services to WSCs that are a member of the DMS. In the pilot project, a SS covering Mubende and Kassanda districts were established in Mubende district, and O&M by DMS was piloted for 99 WSCs that had joined DMS.

(3) Operation of SS under DMS

The SS staff, providing hand pump repair services, consists of a Head of Technical Operations ("HTO") who is responsible for technical operations, an Officer in Charge of People and Society ("OPS") who handles water users' inquiries, etc., an accountant who provides accounting and accounting guidance to caretakers, and an administrator who is responsible for overall operations and management. In addition, each water source subscribing to the DMS has a caretaker in charge of daily maintenance of hand pumps, cleaning around the facilities, and collection of contributions.

For the repair of hand pumps, which is the main task of the SS, a Memorandum of Understanding

¹Initially, DMS was called a district direct management system (DDMS). Although it had the connotation of a district unit, there is a risk that it could be misunderstood as a system operated mainly by the district, so it was resolved at the Ugandan and Japanese meetings in October 2021 to change the name to DMS, taking the district out. In this report, the name DMS will be used throughout.

("MOU") was concluded with existing Mubende HPMA and HPMs under the HPMA are dispatched to the site to repair the hand pumps. This system is beneficial to both the SS and the HPMs, as it enables the SS to reduce operating costs by minimizing the number of staff directly employed, and the HPMs to receive stable requests for repairs and income.

In the pilot project, the above repair system enabled quick and smooth repairs and a significant reduction in hand pump downtime (downtime before the DMS trial ranged from one to two weeks to a month, but after the trial, downtime was reduced to an average of 1.7 days). The repair cost is determined in advance by the MOU, and 90% of the repair cost is paid to the HPM who worked on the repair, and the remaining 10% is paid to the HPMA to which the HPM is a member of. This will enable the HPMA to strengthen its organization and survive.

Although hand pump repair is outsourced as described above, the SS purchases spare parts used by HPM for repair in bulk. Because a variety of spare parts are kept in stock, the time required to purchase spare parts for repairs is reduced, enabling shorter downtime. In addition, the SS checks the quality of spare parts

before purchasing them, thereby ensuring proper quality control.

(4) Organizational structure of DMS

Although the SS is an organization that provides hand pump repair services on behalf of WSCs, it is not a for-profit water supply company like National Water & Sewerage Cooperation, but a non-profit organization managed by the Joint Management Committee (JMC), which is composed of representatives of local governments and WSCs that are members of DMS. In addition, under Ugandan laws, the DMS operating expenses collected from water users are not a tariff for repair services, but rather a contribution to the repair costs, similar to the CBMS. Therefore, as an O&M system for rural water supply facilities, the DMS management method and organizational structure do not conflict with existing laws (The Water Act, The Local Government Act, etc.) and is positioned as an O&M system that is an evolution of CBMS.

In the pilot project, the organizational structure for appropriate operation of the DMS has been studied, tested, and improved. Figure 1 shows the organizational structure and workflow for the operation of the DMS in its rollout phase.

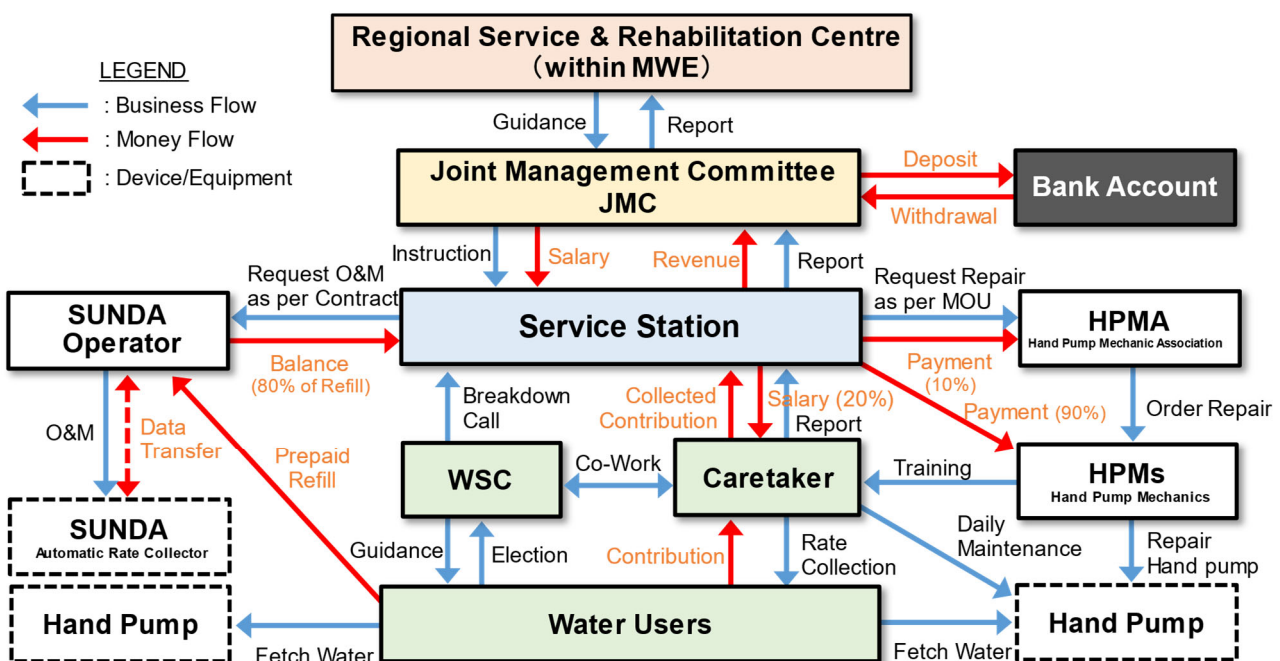


Figure 1 DMS Organizational Structure and Workflow

Although the Japanese side has supported the operating costs necessary for SS activities during the project period, it is expected that the Joint Management Committee (JMC) will assume the role of SS operation and management after the project completion.

(5) Collection of contributions under DMS

Although DMS is a very effective and efficient method for reducing downtime in terms of hand pump repair (downtime reduced to 1.7 days on average), it initially faced the same problem as CBMS in collecting contributions from water users (difficulty in collecting money manually by caretakers and other personnel).

In this project, an automatic collection system was introduced as a method to solve this issue. The system, called Sunda, was developed by Aya Tsuboi as part of JICA's Japan Overseas Cooperation Volunteer activities in Uganda, and she has since been promoting it. The system is a device that is retrofitted to the hand pump, and the facility can be used by holding a tag charged with a pre-paid fee (using mobile money) over the device. Sunda is also equipped with a flow meter, which measures the amount of water pumped by the user and charges the user a tariff accordingly. An

overview of Sunda is shown in Figure 2.

The introduction of the prepaid Sunda system as a method of collecting contributions has greatly reduced the burden on caretakers, who were previously responsible for collection. For caretakers, making numerous visits to water users who had not paid their contributions and asking for payment was mentally and physically demanding work, and was a major cause of resign. The challenges related to the sustainability of the conventional CBMS can also ultimately be attributed to the inability to collect contribution as well as the inability to resolve the management risk and misuse of the amounts (cash) collected.

DMS was able to completely resolve the issues related to the handling of cash in communities by introducing Sunda, a prepaid billing system. The introduction of Sunda was also able to prevent water users who had not paid their contributions² from using the facilities, thereby eliminating the sense of unfairness that had arisen between them and users who had paid their contributions. Furthermore, compared to the conventional collection method, where a fixed monthly fee was collected regardless of the rainy or dry

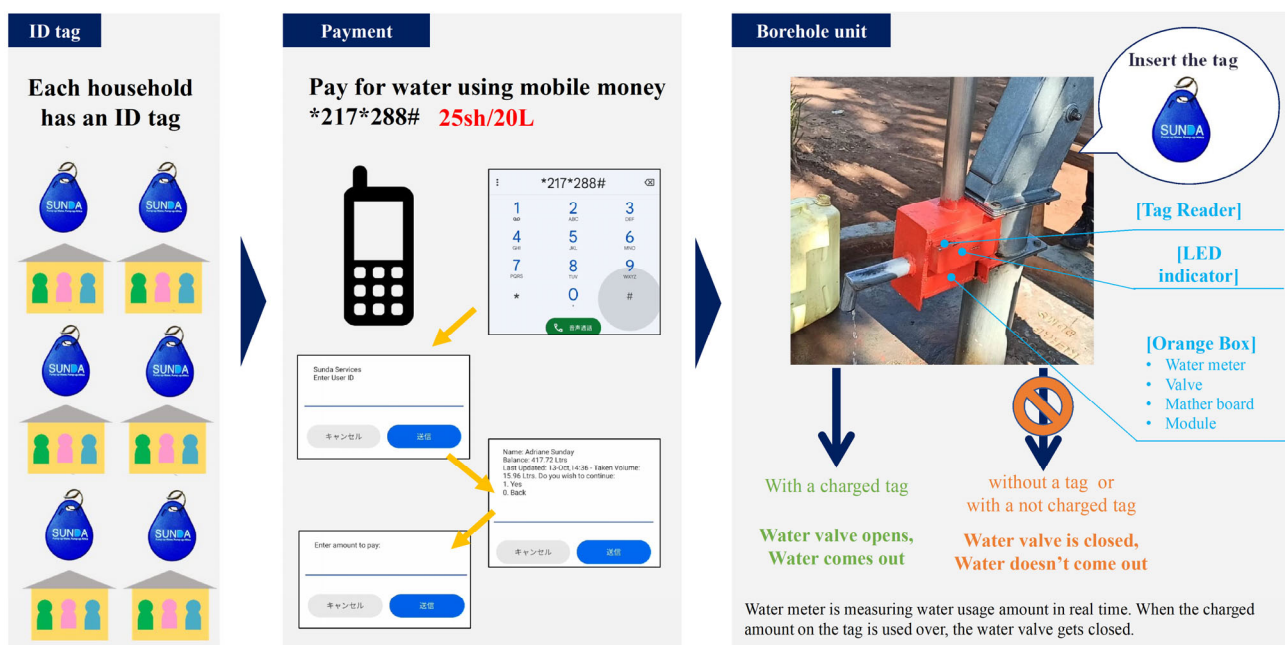


Figure 2 Overview of Sunda System

² Regarding the support for vulnerable people who are certified by their communities, SS can subsidize their online payments to their tags. Therefore, they can use certain amount of free water.

season, the introduction of Sunda has eliminated user dissatisfaction with the flat rate payment system, as they can now obtain the amount of water they need when they need it on a metered basis. As described below, as a result of these effects from the introduction of Sunda, the amount of money collected after the installation of Sunda doubled on average compared to the amount collected before the installation.

(6) Activities for ODF

As part of ODF activities, communities and schools were selected to conduct demonstrations for the construction of latrines with hand washing facilities and awareness-raising activities. The number of target villages is 150 in 18 sub-counties in Mubende and Kassanda districts. The activities include: a) sub-county stakeholder meetings, b) baseline survey, c) triggering, d) construction of latrines with hand washing facilities, e) awareness raising activities at elementary school, and f) ODF verification (for villages that wish to declare ODF).

3. Practical Results of the Approach

(1) Results of hand pump repair under DMS

In implementing the DMS pilot project, water quality test was firstly conducted for WSCs that indicated their willingness to join the DMS to confirm its adequacy as a water source. Next, rehabilitation work, including airlift, hand pump replacement, and repair of apron and fence, was conducted. Therefore, the descriptions in this paper pertaining to hand pump failures are the frequency and nature of failures that occurred under normal usage conditions after the hand pumps were replaced with new ones.

The SS responded to a total of 380 hand pump repairs during the pilot project implementation period (a period of 3 years and 8 months from November 2018 to June 2022). According to the actual number of repairs during the one-year period from January to December 2021, there were 99 major repairs, in which the hand pump was dismantled from the borehole and

repaired, and 12 minor repairs, which were repairs for relatively minor failures, resulting in a frequency of 1.2 failures per water source per year. On the other hand, some of these water sources had hand pumps that failed as often as 4 to 6 times per year, which could be due to the large number of users or structural problems with the boreholes (for example, bent of casings). Note that boreholes that frequently fail for such reasons cannot be addressed by O&M in the DMS, and therefore, measures such as additional drilling or re-drilling of the borehole are necessary.



Photo 1 Repairing a Hand Pump

When the WSC subscribing to the DMS notified of a failure to the SS, the SS dispatches a HPM to the site to carry out repairs to the hand pump. SS staff also accompanies the HPM to confirm the details of the malfunction, manage the repair work, and keep a repair record. Based on these repair records and the results of the baseline survey before the introduction of DMS, a comparison of downtime before and after the introduction of DMS is shown in Figure 3.

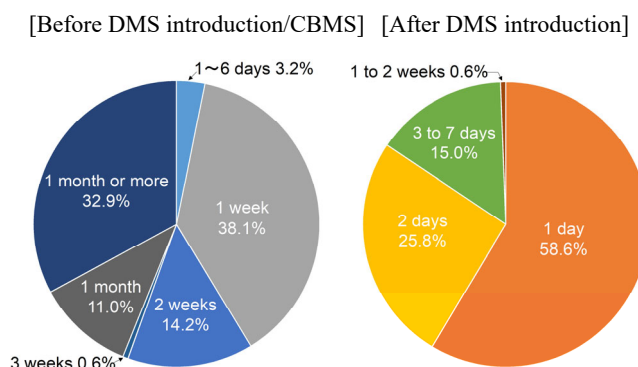


Figure 3 Comparison of Downtime Before and After DMS Introduction

The average downtime after the introduction of

DMS was 1.7 days, which was significantly shorter than that before the introduction of CBMS. In addition, the endline survey for this project compared hand pump utilization rates in the DMS target districts (Mubende and Kassanda) and CBMS target districts (Kiboga, Mpigi, and Butambala). The results showed that the functionality of hand pump in the DMS target districts was 98%, while that in the CBMS target districts was 56%, proving that the introduction of DMS had a significant effect on improving the functionality (Figure 4).

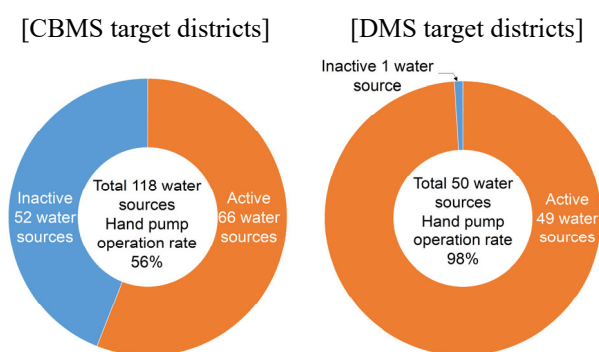


Figure 4 Functionality of Hand Pump under CBMS and DMS

(2) Results of collection of contributions with Sunda

In the pilot project, Sunda was installed at 50 water sources out of 99 in the DMS. Initially, it was expected that there would be some confusion in the installation of the Sunda because it was the first time for water users to experience the system and because it required operations such as charging the tags using mobile money. However, they accepted the Sunda system and used it without difficulty, including children. Care takers are assisting a few users who are unable to operate the mobile money system.



Photo 2 Usage of Sunda

Figure 5 shows a comparison of the amount of money collected (in the six months prior to the installation of Sunda and the most recent six months after the installation of Sunda) at 14 of the 50 water sources where Sunda has been installed and has been in operation for at least six months. As shown in the figure, the amount of money collected after the installation of Sunda doubled compared to the amount collected before the installation of Sunda.

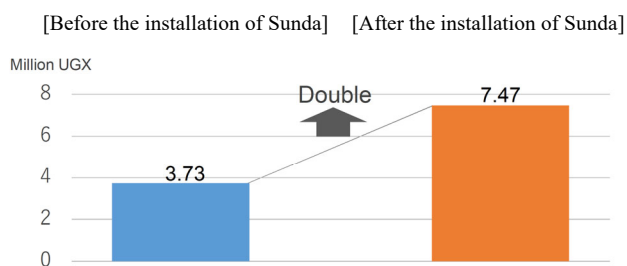


Figure 5: Comparison of the Amount of Money Collected Before and After the Installation of Sunda

Of the 99 WSCs that are members of the DMS, 49 water sources that have not yet installed Sunda are collecting contributions through caretakers. As described above, manual collection does not solve the problems of nonpayment of contributions by water users and management risk and misuse of collected cash. In addition, the amount of money collected tends to gradually decrease over time after the implementation of sensitization activities for water users regarding payment of contributions, making it impossible to conduct stable and sustainable money collection. Furthermore, in the method where SS staff use vehicles to visit WSCs and take cash collected by caretakers, site visit costs such as fuel costs exceed the amount of money collected. Therefore, it is essential to introduce a prepaid collection method for DMS that does not involve cash and utilizes mobile money such as Sunda.

(3) Estimation of profitability of SS

In addition to staff salaries, the operation of a SS requires expenses for repairing hand pumps, purchasing spare parts, vehicles and fuel, and office expenses. The actual expenses (excluding SS staff

salaries) of the 99 water sources participating in the DMS pilot project are 56.8 million Uganda shillings per year ("UGX") (1 UGX = 0.036 Japanese yen equivalent: approximately 2.04 million yen). On the other hand, based on the actual amount collected by Sunda, the amount of contributions collected assuming that Sunda is installed in all 99 water sources is estimated to be 77.9 million UGX (about 2.8 million Japanese yen equivalent) per year. The difference between the above amount collected and expenses (excluding staff salaries) would be 21.1 million UGX (about 0.76 million Japanese yen equivalent), which is the annual salary of just over one SS staff member, and the current scale of the pilot project does not allow for the hiring of four SS staff members.

After the completion of this project, the Mubende SS will continue to operate, and the number of water sources it manages is expected to increase. Figure 6 shows the revenues and expenditures when the number of water sources managed by the SS reaches 300. As shown in the figure, when the number of water sources managed by the SS reaches 300, the difference between revenues and expenditures is estimated to be 63.9 million UGX (about 2.3 million Japanese yen equivalent), and all operating expenses, including salaries of the four SS staff members, are estimated to be covered by the contributions of the water sources that subscribe to the DMS.

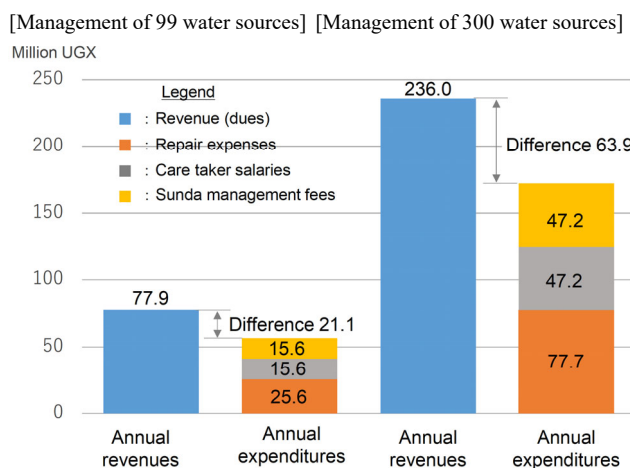


Figure 6 Estimation of Revenues and Expenditures of a SS

(4) Results of ODF activities

In this project, awareness-raising activities on ODF were conducted about 60 times. In addition, 34 demonstrations of latrine construction with hand washing facilities and 14 sanitation marketing activities were conducted, and the concept of sanitation and hygiene has become widespread in villages. As a result, there was an improvement from 4.8% installation rate of latrines with hand washing facilities at the time of the baseline survey (May 2018) to 18.9% at the time of the implementation of the 5th follow-up activity (May 2019). In addition, activities related to ODF promotion brought the number of villages that declared ODF to 13.

The lessons learned from the above activities related to sanitation and hygiene were organized into “Handbook on Hygiene and Sanitation Approaches to Promote Open Defecation Free” and “A Guide to Latrine construction options in rural area of Uganda”.

(5) Conclusions and recommendations

As a result of the pilot project, it has been concluded that a combination of DMS and Sunda (“DMS+Sunda”), is the best O&M approach for rural water supply facilities as an alternative to the conventional CBMS.

Compared to CBMS, DMS+Sunda has shown significant benefits in terms of O&M of rural water supply facilities, including (a) significant reduction in downtime, (b) more efficient operations in collection of money, and (c) 98% of hand pump functionality. Regarding (a), as mentioned above, in the case of CBMS, about 64% of hand pump repairs required one week to one month, while in DMS, about 58% of repairs were completed in one day, and about 84% within two days.

With regard to (b), as mentioned earlier, the amount of money collected after the installation of Sunda doubled compared to the amount collected before installation. In addition, since flow meters are installed in Sunda and water usage data is transmitted and

received in real time, it is possible to manage data such as the amount of water used per month, per water source, and per household on the cloud. Furthermore, the installation of Sunda will make it possible to understand various data, such as the number of users of each water source, which has been difficult to collect in the past when planning rural water supply. In the future, when developing new water sources, it is expected that the data obtained from Sunda will be used as a reference to accurately determine the number of water sources needed.

Currently, DMS+Sunda is only being implemented on a pilot project scale, but as indicated in “(3) Estimation of profitability of SS” above, once the number of water sources managed by a single SS reaches 300, it is estimated that it will be possible to operate continuously and independently without external financial assistance. Therefore, it is expected that this estimation will be verified by increasing the number of water sources managed by the SS in Mubende District to the above number.

On the other hand, in the area of sanitation and hygiene, the follow-up activities were effective in motivating the residents by visiting each household and praising them if their sanitary conditions had improved. In addition, it was effective to focus on children and educate them about the construction of latrines. In order to further improve the sanitation sector in the future, it would be desirable for MWE to collaborate with development partners working in the sanitation sector.

4. Innovations on Project Implementation and Lessons Learned

(1) Establishment of a hand pump repair system

As mentioned above, the SS signed a MOU with the HPMA for the repair of hand pumps, and by making repair a contracted service, the SS was able to streamline their organization. In addition, HPMS receive continuous requests for repairs, which has not only improved their repair capabilities and repair

quality, but has also helped to deter job turnover by stabilizing their income. Moreover, the procurement and storage of spare parts used for repairs are handled centrally by the SS, which ensures the quality of spare parts and enables prompt repair response, reducing the downtime to approximately 1.7 days. In this manner, the establishment of a system that can respond quickly to repair work is essential to reduce the risk of water users using unsanitary alternative water sources during periods of boreholes outages and to ensure that water users have access to safe water at all times.

(2) Improvement in operations for collecting money

As in the case of the conventional CBMS, the amount of money collected from water users (collection of contributions) tends to decrease over time and the number of non-payers increases when the money is collected manually by people such as caretakers. In addition, there is a risk of losing the trust of water users due to suspicions of misuse of the collected cash by caretakers, which may result in the loss of collection. Furthermore, the fee system of paying a fixed monthly amount regardless of the rainy or dry season was unpopular among water users and led to an increase in the number of non-payers. Sunda, an automatic water fee collection system was introduced as a solution to these issues. The introduction of Sunda made it possible to collect fees without cash and on a metered basis, and the amount of fees collected increased. Since the introduction of Sunda, it has been possible to collect contributions stably, and water users do not seem to have any resistance to the introduction of Sunda.

(3) Structures for rolling out the DMS nationwide

This project supported the development of a rollout plan for the nationwide dissemination of the DMS. Specifically, a four-year plan and budget proposal for the fiscal years 2020/2021 to 2023/2024 were developed and approved along with draft guidelines for the DMS at a joint meeting of the Ugandan and

Japanese sides in October 2021.

Under the plan, overall responsibility for the strategy and management of the national rollout of the DMS will be assumed by the National Coordination Committee (“NCC”). The NCC is the highest decision-making body for the national rollout of the DMS and is composed of representatives of MWE, relevant government ministries and agencies, local governments, the JMC, and development partners, with a project team assigned to MWE as its secretariat. Figure 7 shows the organizational chart for the national rollout of the DMS.

For the national rollout of the DMS, the country will be divided into four regions (east, west, south, and north), and Regional Service & Rehabilitation Centers (“RSRC”), which will serve as bases for the DMS rollout, will be established in Mubende, Jinja, Gulu, and Masaka, respectively.

The RSRCs are central government organizations

composed of MWE officials that will be responsible for opening SSs in their respective jurisdictions, educating the public on DMS membership, and rehabilitating water sources enrolled in the DMS, according to the DMS rollout plan decided by the NCC as the main tasks. On the other hand, day-to-day repair of hand pumps will be carried out by SSs under the management of the JMC.

(4) Toward nationwide rollout of the DMS

As mentioned above, it is estimated that if one SS manages about 300 water sources, the operating expenses and revenues of the DMS (DMS+Sunda) will be balanced and the DMS can operate on an independent basis without external financial assistance. For this reason, it is recommended that SSs be established throughout the country, with each SS managing 300 water sources as a single unit. As shown in Table 1, the initial cost of establishing one unit is estimated to be approximately USD 1.2 million

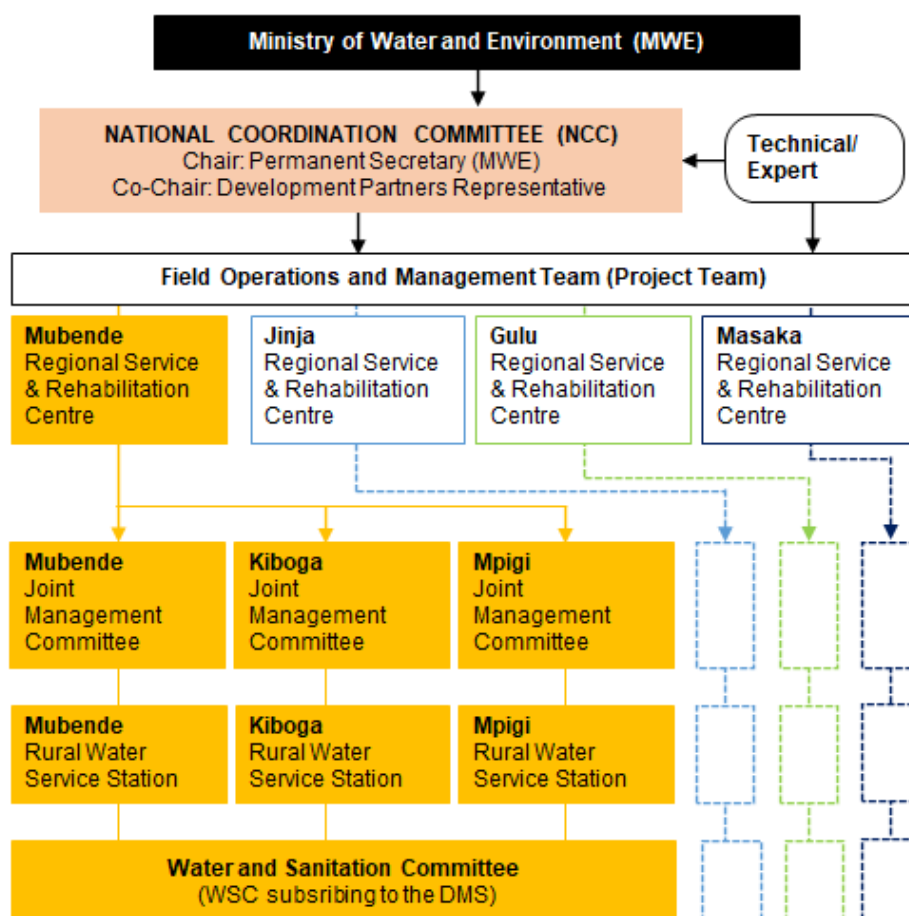


Figure 7 Implementation Structure for Nationwide Rollout of DMS

(Japanese yen equivalent: USD 1 = 133 yen: approximately 160 million yen), including the cost of borehole rehabilitation and awareness-raising activities for WSCs to join the DMS.

Table 1 Initial Costs of Establishing a SS

Item	Q'ty	UGX total (Monetary unit: 1,000 UGX)	USD total (Conversion rate 1\$=3,600 UGX)
1. Field survey	300	60,000	16700
2. Borehole rehabilitation work - Air lift - Lifting test - Apron construction, etc.	300	1666800	463000
3. Hand pump materials - U2 hand pump set - U2E hand pump set - HPM training	300	1166400	324000
4. Sunda unit	300	1080000	300000
5. Capacity development - Educational activities - WSC & caretaker training, etc.	300	270000	75000
6. Personnel expenses - Managers - Finance and accounting - Technicians and drivers, etc.	24 Months	182,400	50800
Total		4,425,600	1,229,500

(5) Future prospects for DMS+Sunda

As a result of the pilot project conducted, it has been deemed that DMS+Sunda is the most appropriate method to solve the problems faced by O&M of rural water supply facilities. The Government of Uganda (MWE) has also already decided to make DMS+Sunda a national policy for the country, replacing the conventional CBMS. In order to implement DMS+Sunda nationwide, it is first necessary to increase the number of water sources managed by the Mubende SS to 300, in order to demonstrate the estimate (assumption) that the sustainable and self-financing operation of the SS is possible.

In order to demonstrate the above, MWE intends to give priority to securing budget for and implementing the dissemination of DMS+Sunda in Mubende and

Kassanda districts under the jurisdiction of Mubende SS (the same policy has been explained and approved at the Joint Coordinating Committee for this project). In addition, borehole rehabilitation equipment and materials provided by the JICA Uganda office will be used in the rehabilitation of boreholes during the spread of DMS+Sunda within the Mubende SS area of jurisdiction.

As described above, DMS+Sunda, a new O&M method for rural water supply facilities proposed in this project, is expected to spread throughout Uganda going forward. Meanwhile, DMS+Sunda is expected to be applicable not only in Uganda but also in sub-Saharan countries that face similar challenges in O&M of rural water supply facilities. In these countries, although many boreholes with hand pumps have been constructed by governments and development partners in the past, the reality is that many of these facilities are non-functional due to O&M issues. By introducing DMS+Sunda proposed in this project instead of CBMS, which is a conventional O&M method, it is expected that the underutilized facilities in these countries will be put to effective use again.

(Implementation period: September 2015 to August 2022)

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